City of High Point **Public Services Department**

Annual Wastewater Report

Sewer Collection and Wastewater Treatment Facilities
Report for FY 2009-2010
(July 1, 2009 through June 30, 2010)

On July 21, 1999, North Carolina Governor James Hunt signed a law, House Bill 1160, that placed reporting requirements on the owners or operators of wastewater treatment and wastewater collection facilities in North Carolina. Part of this new legislation was a requirement to provide the user or customers of the system with an annual report of the past year's performance including a summary of violations.

The purpose of these reports is to provide an understandable and informative description of the **wastewater treatment facilities and collection system,** describe the regulations with which these facilities must comply, and promote a general awareness of these facilities and their role in protecting the environment.

The City of High Point operates two wastewater treatment facilities and a wastewater collection system that collects and transports the wastewater to each of these two facilities. The names and permit information for these facilities are listed below as well as those professionals designated by the State of North Carolina as Operators in Responsible Charge (ORC):

Eastside Wastewater Treatment Plant
5898 Riverdale Road
Jamestown, NC 27282
Phone: 336-822-4732
NPDES Permit #: NC0024210
ORC: Randy Smith

Westside Wastewater Treatment Plant
1044 W. Burton Rd.
Thomasville, NC 27360
Phone: 336-883-3406
NPDES Permit #: NC0024228
ORC: Michael Swan

Sewage Collection System
816 East Green St. High Point
Phone: 336-883-3691
Collection Permit #: WQCS00010
ORC: Bart Hepler

This report is available for viewing at City Hall (Public Services) or by logging onto our web site at www.high-point.net. Customers will be notified of its availability by printed notice on water and sewer bills. Questions, comments, or requests for additional copies of this report should be directed to the Public Services Department at (336) 883-3299. This report has been completed by staff of the City's Public Service's Department and is accurate to best of our knowledge and belief.

Terry Houk, Assistant Director
Public Services

System Overview

The Public Services Department bears the responsibility for wastewater collection and treatment. The Divisions in the Department that are involved in wastewater collection and treatment are: Water & Sewer Mains, Residuals Management, Central Laboratory Services, Maintenance Services, Westside Wastewater Treatment Plant and Eastside Wastewater Treatment Plant.

The City's wastewater collection and wastewater treatment facilities provide service to homes, commercial establishments and industries. For this report period, there were approximately 38,000 connections through which an average of 17 million gallons of wastewater traveled each day. This wastewater is collected, treated and then discharged back into the receiving stream. The City also treats wastewater from Jamestown, Archdale and Sedgefield.

State agencies assure that stringent standards are met before the treated wastewater can be released into a receiving stream. These standards are listed in a National Pollutant Discharge Elimination System (NPDES) permit. Each facility that releases treated wastewater into surface water; a stream for example, must possess one of these permits. These permits regulate the type and amounts of pollutants that a facility can discharge. The discharge limits in these permits are based on a stream's ability to withstand the addition of pollutants without having noticeable impact on the stream's water quality. These complex permits include monitoring requirements and discharge limits. Some vary with seasons and have different maximums for daily values, weekly averages, monthly averages and quarterly averages.

Wastewater treatment is a complex process that is often taken for granted. However, it requires expensive equipment and skilled operations, maintenance, laboratory, solids handling and engineering personnel working constantly to assure adequate treatment twenty-four hours a day, seven days a week, and 365 days a year!

Collection System Overview

High Point's wastewater collection system consists of approximately 653.8 miles of gravity wastewater lines, which is an additional 1.1 miles over last year's total; 16.0 miles of pressurized force mains; 23 wastewater lift stations, and 16,546 manholes. Every day more than 17 million gallons of wastewater flows through this system, from homes and businesses, to either the Eastside or Westside Wastewater Treatment Plants. The collection system has both gravity lines and force mains. Wastewater discharged in neighborhoods flows by gravity into the collection system. The size of the collection system line increases to handle the higher flow as more and more wastewater is collected from other areas. Once the gravity lines get too deep, the flow must be pumped or lifted up, by the City's lift stations, to a higher elevation where gravity lines can be once more utilized. The lift stations are monitored 24 hours a day for proper operation. The Mains Division has four crews that are responsible for line cleaning and emergency response to calls from the public dealing with collection system problems.

A State mandated grease (FOG) program has been instituted. The collection system maintenance crew has been working diligently at keeping the lines clean. A concerted effort is needed between the City and its citizens in order to reduce the grease related problems in the collection system.

Despite the City's best effort, sanitary sewer overflows (SSO's) happen in High Point, just as they do in every municipality in North Carolina. A SSO is when wastewater escapes from the wastewater collection system to the ground or surface waters. The North Carolina Division of Water Quality defines a reportable SSO as any spill to the ground in excess of 1000 gallons or any spill, regardless of the amount, which reaches surface waters. During this report period, the City of High Point had 36 reportable SSO's. Completion of outfall rehabilitation projects should reduce the potential amount of spills in the future. Approximately 30.56% of

SSOs in the City can be attributed to grease, 8.33% to sewer main breaks, 8.33% attributed to roots, 19.44% to debris blockages, and 27.78% I&I, 2.78% other and 2.78% spilled from Lift Stations. The SSO's are summarized in the appendix.

What the Mains Division is doing to Prevent/Reduce Spills

- Inspect, repair, renovate or replace sewers and pump stations as needed to eliminate leaks or to increase system capacity.
- Inspect and clear collection lines with cutting and flushing equipment.
- Educate customers about proper grease disposal.
- Clear collection system easements to keep roots from growing into collection lines; limit plantings allowed along easements.
- Operate a continuous monitoring and alarm system at pump stations; maintain and repair pumps; use generators for backup power; replace pump stations with gravity sewers when practical; monitor and inspect pump stations to identify improvement needs.
- Ask customers to contact the City if they see debris or trash being put in the collection system.

Corrective Actions

Follow-up actions depend on the cause and severity of the spill and may include:

- ☑ cleanup and disinfection;
- ☑ inspection and clearing of mains;
- ☑ increased inspections or other maintenance;
- ☑ repair, renovation or replacement of pipes; and
- ☑ in some cases, replacement of sewers or pump equipment with larger capacity facilities

Eastside Wastewater Treatment Plant

The Eastside Wastewater Treatment Plant is designed and operated as a biological nutrient removal (BNR) facility. Essentially, this means that an environment has been created that encourages the growth of phosphorus removing bacteria that will consume phosphorous at higher than normal levels, thus removing it before the water is discharged. Also, another environment will be created that forces the bacteria to use oxygen from nitrogen compounds thereby reducing the amount of total nitrogen in the treated effluent. The reduction of phosphorous and nitrogen in the plant's effluent will help in reducing the potential for algae growth in Randleman Lake.

Other treatment processes include screening, grit removal, primary clarification, 5-stage activated sludge, secondary clarification, effluent filtration, ultraviolet disinfection, post aeration and solids handling. Also, the odor control project has been completed and is online; it included installation of covers over the two sludge holding tanks and a chemical feed system to enhance reduction of odors. All of these major processes and numerous other minor processes are used to support the biological treatment process.

The Eastside WWTP treated an average of 13.54 MGD during the fiscal year 2009 - 2010.

Eastside had two NPDES violation during the 2009 - 2010 fiscal (reporting) year. The current permit became effective on February 1, 2007 and expires on August 31, 2011.

Westside Wastewater Treatment Plant

The Westside WWTP is an activated sludge facility. Treatment processes include coarse bar racks, influent lift pumps, fine screening, grit removal, primary clarification, aerated sludge, biological filtration, final clarification, alum addition for phosphorus precipitation, lime slurry addition for alkalinity/pH adjustment, tertiary filters, DAF sludge thickening/ dewatering, and ultraviolet light disinfection.

During the 2009 – 2010 fiscal year, Westside WWTP reported 6 NPDES violations to the North Carolina Division of Water Quality.

A new NPDES permit was issued to the Westside WWTP on July 10, 2009 by the DWQ. This permit became effective August 1, 2009 and will be in effect until midnight April 30, 2014. On November 1, 2005 the new seasonal phosphorus limits became effective, which are based on seasonal discharge poundage. The winter season is, November 1 - March 31, (7808 lbs.). The summer season is, April 1 – October 31, (5533 lbs.).

An average of 3.59 MGD (million gallons per day) was treated during the fiscal (reporting) year 2009 - 2010.

Plant upgrade and renovation of the Westside WWTP is currently underway. Phase 1 was completed in November of 2009 and has been in service since that time. This phase encompasses the completely new construction of a PTF (Preliminary Treatment Facility), installation of fixed domes on the two sludge holding tanks, and includes an odor control chemical scrubbing system.

The contract for Phase 2 was signed in December with work commencing in January 2010. This phase includes the construction of effluent sand filters, an effluent pump station, installation of an additional UV disinfection unit, installation of a rotary drum thickener, and construction of an earthen berm for flood prevention. A design study is currently underway at the Westside Plant in anticipation of growth and increasingly strict NPDES discharge limits. BNR, (Biological Nutrient Removal) is the treatment process being recommended.

Maintenance Services

The City of High Point Eastside Wastewater Treatment Plant, Westside Wastewater Treatment Plant, and all lift stations are maintained by the centralized Water and Sewer Maintenance Department. The centralized maintenance department consists of mechanics, electricians, electronics technicians, an assistant maintenance superintendent, a maintenance superintendent, and a part-time groundskeeper. The main maintenance shop is centrally located at the Ward Water Filtration Plant, with satellite shops at the Westside and Eastside Wastewater Treatment Plants. All the technicians are highly trained with many years of maintenance experience.

The electronics section technicians are qualified to perform technical and skilled work in the maintenance, repair and replacement of electrical, electronic and pneumatic equipment at the treatment and collection facilities. This section has individuals that possess a thorough knowledge and background in troubleshooting and programming PLC based systems, performing computer based technical assistance for the wastewater treatment plants and lift stations, creating graphic screens and programming the SCADA systems so that the lift stations and wastewater treatment equipment can be remotely monitored and, in some cases, controlled from a centralized location. They also are responsible for installing and repairing all hardware and software for the computers and peripheral devices and creating databases and spreadsheets so that historical data can be maintained and accessed easily.

The electrical section personnel work hand-in-hand with the electronics staff and are qualified to perform general skilled maintenance and repair of electric motors, high and low voltage switching equipment, electrical control systems, i.e., centrifuge/incinerator controls; circuits, lighting, heating and air conditioning electrical components, UV disinfection systems and troubleshoot the diesel generator electrical systems, etc.

The mechanical technicians troubleshoot and repair complex pumping and wastewater treatment equipment. They are capable of dismantling and overhauling gearboxes, grit collection equipment, conveyors, mechanical grinders, pumps of all types, blowers and compressors, mixers, centrifuges, fluidized bed incinerator, control valves and various other process equipment. They possess technical skills such as proper alignment techniques, welding, use of cutting torch and some limited machine shop skills.

An on-call Maintenance team is available after hours, weekends and holidays to respond to emergency and equipment breakdowns at the water filtration plant, both wastewater plants, and all lift stations.

The mission of the Water and Sewer Maintenance Department is to maintain the equipment at the Eastside Wastewater Treatment Plant, the Westside Wastewater Treatment Plant and all Lift Stations so that they remain in compliance with all federal, state and local regulations. This goal is accomplished by responding to corrective maintenance work orders in a timely manner and by performing preventive maintenance as scheduled.

Laboratory Services

Most laboratory analyses are performed at the City's state-certified laboratory located at the Ward Water Filtration Plant. The central Water Quality Lab provides comprehensive analytical monitoring and compliance support for the Public Services Department, Plants Division. This ensures monitoring and reporting compliance with all permitted State, Federal and local laws and ordinances. The central Water Quality Lab provides necessary and required testing to assure safe, clean drinking water, as well as performing analysis on the incoming and outgoing flows from both Wastewater Treatment facilities, as stipulated by the NPDES permits. On average, the lab reports 13,000 tests to the state, 8,500 tests that aid in the safe and efficient operation of the plants and over 200,000 tests required by certifying authorities to assure accuracy.

The Industrial Pretreatment Program manages industrial and non-residential discharges into the City's sanitary sewer system. Staff of the Industrial Pretreatment Program survey facilities discharging into the sewer system and issue permits to those falling into certain categories, determined either by the type of business activity they conduct or the type(s) of waste discharged from their facility. Permit limits are established based on the ability of the receiving treatment plant – either the Westside WWTP or the Eastside WWTP – to assimilate, treat and remove substances from the incoming waste stream. There were no discrepancies noted during the State inspection of IPP in 2009 - 2010. Some major changes are being implemented in IPP, and Headworks analysis has been updated.

Residuals Management

The City's Residuals Management Division has the task of disposing of the bio-solids from Westside WWTP, Eastside WWTP, and the disposal of alum sludge generated by the Ward Water Plant.

Bio-solids produced by the wastewater Plants is dewatered with centrifuges located at each wastewater plant. Residuals Management handled approximately 38,000,000 gallons of bio-solids and produced approximately 4,300 metric tons of dewatered bio-solids that were incinerated in an incinerator located at the Eastside WWTP.

EPA and State compliance with air quality standards is also the responsibility of Residuals Management. Since Residuals Management has air quality permits, it is responsible for overseeing additional City air quality permits. There were no compliance issues with the air quality standards during this reporting year.

In addition to wastewater solids, Residuals Management oversees the dewatering of the alum sludge produced by the treatment of drinking water at the Ward Water Plant.

Residuals Management has been able to carry out its mission of providing efficient and prompt service with its staff of dedicated employees.

What is the City Response?

The City of High Point is committed to improving and maintaining compliance with all regulations regarding the wastewater system. Major capital improvement projects include:

- $2,600,000.00 to upgrade/replace several sewer pump stations
- $3,300,000.00 for sewer system improvements
- $5,500,000.00 for Bio-Solids Disposal Improvements
- Completion of Phase 1 improvement project at Westside WWTP
- $11,000,000.00 for improvements to the Westside WWTP - Phase 2
- Westside Phase 2 improvement project begun January 2010.
- Completion/termination of State SOC requirements
- 50% completion of the design for Westside Phase 3 improvements

Customer Responsibilities

The leading cause of overflows is debris and grease blockages in the lines. While the collection system is designed to handle and safely transport sanitary waste to our treatment plants, too much grease or non-biodegradable material placed into the system can cause clogs and result in sanitary sewer overflows (SSOs). Dumping any fats and oils derived from animal and vegetable sources, including meats, nuts, cereals and beans, down any drain – home or business – can cause a stoppage that forces raw, untreated waste to spill into our yards, streets, and streams.

It is very important to keep all foreign materials, such as grease and other household debris from entering the system, as these can cause blockages.

You can help the City of High Point reduce the number of overflows by following these simple steps:

- Collect grease, fats and oils from cooking in a container and dispose of it in the garbage instead of pouring it down the drain.
- Always scrape silverware, cookware, and dishes prior to washing.
- Place food scraps in the garbage for disposal with you household solid waste.

Please call the City of High Point to report water main break or sanitary sewer overflow. To report a problem, please call 883-3111. Your assistance is appreciated!

Appendix

DATE	ADDRESS	AMOUNT	CAUSE
09-Jul-09	303 N ROTARY DRIVE	60	Debris
28-Jul-09	905 ROCKFORD RD	800	Grease
31-Jul-09	1044 W BURTON RD	200	Inflow & Infiltration
06-Aug-09	816 E GREEN DR	500	Grease
18-Aug-09	3404 TRIANGLE LAKE RD	500	Grease
30-Aug-09	1433 N HAMILTON	800	Sewer Main break
31-Aug-09	1044 W BURTON RD	1500	Inflow & Infiltration
01-Sep-09	816 E GREEN DR	800	Sewer Main break
02-Oct-09	1116 MONTLIU AV	200	Debris
23-Oct-09	WESTMINSTER & DEVONSHIRE	10	Debris
12-Nov-09	ABERDEEN & HILLSIDE DR	140	other
12-Nov-09	916 SHAMROCK	1200	Inflow & Infiltration
12-Nov-09	1044 WEST BURTON	2700	Inflow & Infiltration
20-Nov-09	1589 SKEET CLUB	138	Grease
23-Nov-09	124 ORVILLE DR	287	Debris
24-Nov-09	2419 DALLAS AV	55	Roots
03-Dec-09	403 EMERYWOOD RD	450	Grease
06-Dec-09	1020 FERNDALE AV	60	Grease
23-Dec-09	1904 MIDDLEWOOD CT	274	Roots
30-Dec-09	BETHEL DR	360	Lift station

11-Jan-10	521 PENDELTON STREET	300	Grease
12-Jan-10	1007 FIFTH CT	454	Debris
25-Jan-10	Terrell Dr & Mcguinn Dr	28000	Inflow & Infiltration
26-Jan-10	KERSEY VALLEY	3750	Sewer Main break
05-Feb-10	3507 BENTBROOK DR	326	Inflow & Infiltration
05-Feb-10	INTERSECTION TERREL & Mcguinn Dr	900	Inflow & Infiltration
05-Feb-10	916 SHAMROCK ST	4000	Inflow & Infiltration
05-Feb-10	324 WOODBROOK RD	1350	Inflow & Infiltration
05-Feb-10	300 WOODBROOK	1500	Inflow & Infiltration
07-Feb-10	1208 A FURLOUGH AV	500	Debris
15-Feb-10	237 OLD MILL RD	500	Grease
16-Mar-10	234 DOROTHY ST	600	Debris
19-Apr-10	129 ASBILL	500	Roots
19-Apr-10	206 IRBYWOOD	200	Grease
07-May-10	500 HNERY PL	4200	Grease
18-May-10	SCENTIFIC & PRUITT PL	335	Grease